

## DIET OF BREEDING TROPICAL SCREECH-OWLS (*OTUS CHOLIBA*) IN SOUTHEASTERN BRAZIL

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The Tropical Screech-Owl (*Otus choliba*) occurs east of the Andes Mountains from Costa Rica to Uruguay and northern Argentina, and is also found throughout much of Brazil (Meyer de Schauensee 1966, Burton 1992, Sick 1993). It is one of the most common and widespread neotropical owl species inhabiting forest edges, open woodlands, savannas, and other habitats with some arboreal cover, including urban areas (Sick 1993, del Hoyo et al. 1999). Despite its commonness and widespread distribution, little ecological information is available on this species, except for some data concerning natural history and breeding (Thomas 1977, Smith 1983). Food habits have been described only qualitatively (e.g., Thomas 1977, Smith 1983, Gallardo and Gallardo 1984). Here, I provide more detailed information about the diets of nestling and adult Tropical Screech-Owls during the breeding season. Data on nest locations and the timing of reproduction in southeastern Brazil are also presented.

### STUDY AREA AND METHODS

The study was conducted at Chácara Mattos/Faber-Castell (21°59'S, 47°56'W), located 1 km west of the city of São Carlos, São Paulo State, Brazil. The 90 ha study area consists primarily of *Pinus* spp. plantations with some secondary-grassland savanna. A small patch (3 ha) of disturbed gallery forest also occurs in this area. The landscape surrounding the study area is sugar cane plantations and the outskirts of the city of São Carlos. The climate is a transition between Köppens's Cw<sub>ai</sub> and Aw<sub>1</sub>, or rainy tropical with a wet (October–March) and a dry (April–September) season (Tolentino 1967).

Four samples of pellet debris (representing ca. 30 pellets) and six complete pellets were collected from three occupied nest cavities. This material was washed through a fine mesh screen (0.2 mm) and oven-dried (50°C) for 24 hr for storage and analysis. Prey remains were identified by comparison with a reference collection made from material from the study. I also measured the mass of prey items collected from the study area. Individuals in the prey remains were counted by pairing mandibles, with the exception of beetles and ants, which were counted by the number of heads, and scorpions by the number of stings. The analyzed prey remains presumably were from owlets and possibly adults. I also assumed that vertebrate prey were entirely ingested like invertebrates, because crania and other body bones were always present

in the pellets. Both prey remains and the reference collection were deposited at the Departamento de Ecologia, Universidade de São Paulo, Brazil.

### RESULTS AND DISCUSSION

All three nests were in cavities located at a height of 1.0–1.5 m in dead *Eucalyptus* sp. tree trunks, presumably made by woodpeckers originally. Smith (1983) pointed out that Tropical Screech-Owl nests are typically located in tree cavities. In spite of the monthly field excursions to the study area during 1992–93, nests were only found on 25 November 1992 (Nest 1, with one female and three owlets), 28 October 1993 (Nest 2, with one female and two owlets), and 6 November 1993 (Nest 3, with one female and three owlets). The three adult females inside cavities were captured by hand and weighed with a spring scale. The mean and standard deviation of body mass was  $128.3 \pm 11.7$  g. Subsequently, the adults were placed back into the cavities. Prey remains were collected the first time the nest was found and shortly after owlets fledged.

Analysis of pellets and pellet debris revealed at least 34 species of prey consumed. Invertebrates, mostly orthopterans such as *Lutosa brasiliensis*, were most frequent in the diet (Table 1). Spiders (Lycosidea) and ants (Formicidae) were also important numerically. In terms of biomass, invertebrates also prevail, however, the few vertebrates found, represented a third of the consumed biomass (Table 1).

The mean body mass of prey consumed by Tropical Screech-Owls was  $0.93 \pm 2.35$  g, ranging from 0.02–28.80 g ( $N = 309$  prey items). Most prey (73.5%) weighed between 0.1–1.0 g.

Tropical Screech-Owls only were observed foraging at night. On two occasions, an individual was observed leaving a perch on a tree and, in flight, capturing insects on the leaves of another tree. On another occasion, an individual left a perch on a bush and captured an unidentified invertebrate on the ground. Gallardo and Gallardo (1984) reported a similar behavior in Tropical Screech-Owls. I have observed these screech-owls catching insects in flight, particularly in the vicinity of artificial light sources, which was also reported by Smith (1983) and Sick (1993). During the period of activity (1800–0600 H) owls were observed on perches waiting for potential prey; therefore, this species probably should be classified as a “sit-and-wait” forager, which is typical for the genus *Otus* (Jaksic and Carothers 1985).

The qualitative studies of Thomas (1977) and Smith (1983) indicated that the diet of Tropical Screech-Owls consisted mostly of insects in Costa Rica and both insects

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Table 1. Prey items found in pellets and pellet debris of Tropical Screech-Owls in southeastern Brazil, with their percentages in relation to total number and estimated biomass (g). Activity periods and sites of prey were determined based on field observations and information provided by Manoel M. Dias (pers. comm.).

PREY ITEMS	ACTIVITY PERIOD	ACTIVITY SITE	PERCENT NUMBER	PERCENT BIOMASS
<b>Rodents</b>				
<i>Bolomys lasiurus</i>	Nocturnal/crepuscular, Diurnal	Ground	0.3	10.1
<i>Calomys tener</i>	Nocturnal/crepuscular	Ground	0.3	3.6
<i>Oligoryzomys nigripes</i>	Nocturnal/crepuscular	Foliage/branches, Ground	0.3	6.0
<b>Opossums</b>				
<i>Gracilinanus</i> sp.	Nocturnal/crepuscular	Foliage/branches, Ground	0.3	5.7
<b>Snakes</b>				
Unidentified small sp.	?	?	0.3	3.3
<b>Amphibians</b>				
Hylidae (unidentified sp.)	Nocturnal/crepuscular	Foliage/branches	0.3	5.3
<b>SUBTOTAL VERTEBRATES</b>			1.9	34.1
<b>Scorpions</b>				
<i>Bothriurus</i> spp.	Nocturnal/crepuscular	Ground	3.6	1.0
<i>Tityus bahiensis</i>	Nocturnal/crepuscular	Ground	0.3	0.1
<b>Spiders</b>				
Lycosidae (unidentified sp.)	Nocturnal/crepuscular	Ground	11.3	5.9
Unidentified spp.	?	?	1.3	0.8
<b>Harvestmen</b>				
Opiliones (unidentified sp.)	?	?	0.3	0.1
<b>Insects</b>				
Blattidae ( <i>Parahormetica</i> sp.)	Nocturnal/crepuscular	Ground	1.6	3.2
Blattidae (unidentified sp.)	?	?	0.3	0.2
Termitidae (workers)	Nocturnal/crepuscular, Diurnal	Ground	2.6	0.2
Acrididae spp.	Diurnal	Foliage/branches	2.9	1.4
Tettigoniidae (Copiphorinae)	Nocturnal/crepuscular	Foliage/branches	5.8	6.0
Tettigoniidae (Conocephalinae)	Nocturnal/crepuscular	Foliage/branches	0.6	0.2
Gryllacrididae ( <i>Lutosa brasiliensis</i> )	Nocturnal/crepuscular	Ground	41.1	34.2
Gryllidae	Nocturnal/crepuscular	Ground	1.6	1.6
Unidentified Orthoptera	?	?	0.6	0.3
Mantidae	Nocturnal/crepuscular	Foliage/branches	4.2	2.8
Carabidae (small unidentified spp.)	Nocturnal/crepuscular	Ground	1.0	0.1
Scarabaeidae (Rutelinae)	Nocturnal/crepuscular	Foliage/branches	0.3	0.3
Scarabaeidae (Dynastinae)	Nocturnal/crepuscular	Ground	2.6	3.1
Cerambycidae	Nocturnal/crepuscular	Tree trunks	1.6	2.4
Unidentified adult Coleoptera	?	?	1.0	0.4
Unidentified larvae Coleoptera	?	?	1.0	0.4
Lepidoptera (unidentified small moth)	?	?	0.3	0.1
Lepidoptera (unidentified caterpillar)	?	Foliage/branches	1.0	0.3
Formicidae ( <i>Atta sexdens</i> queen)	Nocturnal/crepuscular, Diurnal	Ground	0.3	0.2
Formicidae ( <i>Camponotus</i> spp.)	Nocturnal/crepuscular, Diurnal	Tree trunks, Ground	5.2	0.1
Formicidae (Dorylinae)	Nocturnal/crepuscular, Diurnal	Ground	1.9	0.1
Formicidae (unidentified spp.)	?	?	3.2	0.1
Other unidentified Insecta	?	?	0.3	0.2
<b>SUBTOTAL INVERTEBRATES</b>			98.1	65.9

and vertebrates in Venezuela, respectively. Prey taken by these owls include katydids, beetles, cockroaches, small snakes, and rodents (Thomas 1977, Smith 1983, this study). Larger species like *Otus asio* and *O. kennicottii* seem to include proportionally more vertebrates in their diets (e.g., Ritchison and Cavanagh 1992, del Hoyo et al. 1999). On the other hand, smaller species such as *O. trichopsis*, *O. flammeolus*, and *O. choliba* appear to be mostly insectivorous (Ross 1969, del Hoyo et al. 1999, this study).

The frequent consumption of the terrestrial arthropods, *Lutosa brasiliensis* (Lycosidae) and others (68.5% by number and 63.3% by biomass) suggests that prey are often captured on the ground (Table 1). A similar pattern in the prey data supports that the Tropical Screech-Owls were essentially nocturnal; the diet consists mainly of night prey (76.8% by number and 81.5% by biomass; Table 1).

RESUMEN.—Se estudió la dieta del Autillo Chóliba (*Otus choliba*) durante el período reproductivo, entre los meses de octubre y diciembre de 1992 y 1993, en una localidad del Sudeste de Brasil. Se identificaron por lo menos 34 especies de presas a partir de egagrópilas, directamente colectadas en tres nidos ubicados en cavidades de troncos muertos a 1.0–1.5 m del suelo. Insectos, en especial *Lutosa brasiliensis* (Gryllacrididae) y otros ortópteros, arañas y escorpiones formaron la base de la dieta. Aunque los invertebrados fueron los más importantes numéricamente (98.1% del total de 309 individuos), los vertebrados tuvieron representación significativa en términos de biomasa consumida estimada (34.1% del total de 286.0 g). La mayoría de las presas eran nocturnas y terrícolas, indicando los hábitos de caza de esta lechuza.

[Traducción del autor]

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